

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : David L. Anglin

Art Unit : 1745

Serial No. : 09/829,709

Examiner : Julian Mercado

Filed : April 10, 2001

Conf. No. : 1782

Title : BATTERY CATHODE

Mail Stop AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

PRE-APPEAL BRIEF

This brief is directed to clear errors set forth in the final Office Action mailed 7/28/06 and reaffirmed in the Advisory Action mailed 10/12/06.

Claims 1, 9, 10, 12-29, 31, 33-36, 39-41, 43-55, 57 and 58 currently are pending, of which claims 1, 31, and 35 are independent. Claims 1, 9, 10, 12, 19, 31, 33, and 57 stand rejected under 35 U.S.C. § 103 as allegedly rendered obvious by Friend, EP 0 962 997 A1, ("Friend") in view of Adams, U.S. Pat. 4,177,157 ("Adams") and further in view of Anderson, U.S. Pat. 4,948,484 ("Anderson").¹ Claims 13-18, 20-22, 35, 36, 39-41, 43-48, 50, and 58 stand rejected under 35 U.S.C. § 103 as allegedly rendered obvious by Friend, in view of Adams, and further in view of Anderson, U.S. Pat. 4,948,484 ("Anderson"), and further in view of Yagi, U.S. Pat. 4,923,637 ("Yagi"). Each of these rejections is separately discussed in the Amendment filed 9/12/06. None of the references, alone or in combination, provides a sufficient desire, reason, or motivation for one having ordinary skill in the art at the time of invention to make a battery having the claimed composition.

The Examiner justifies this hindsight combination of references by both misapplying the teachings of the references and by overstating the ruling in *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). For at least these two reasons, every rejection under 35 U.S.C. § 103 is clearly erroneous, and should be reversed.

Every claim now requires at least a cathode including between 82% and 92% manganese dioxide by weight and between 6% and 10% of carbon fibers by weight, an anode including zinc, a separator, and an alkaline electrolyte.

As the Examiner admits, Friend does not teach a cathode having between 82% and 92% manganese dioxide or having between 6% and 10% carbon fibers. (Office Action mailed 12/2/03, page 3, line 1 & lines 12-13). Friend instead discloses specific examples having between 51.24% and 53.07% manganese dioxide and between 4.02% and 5.14% carbon fiber. (See Friend, paragraph 39, Table II, Examples I, II, and III; Amendment filed 9/12/06, page 9, sixth paragraph).

¹ In the final Office Action mailed 7/28/06, the Examiner rejected claims 1, 9, 10, 19, 31, 33, and 57 as rendered obvious by Friend in view of Adams and also rejected claims 11 and 12 as rendered obvious by Friend in view of Adams and further in view of Anderson. In the after-final amendment filed 9/12/06, the Applicants amended independent claims 1 and 31 to incorporate the limitations of claim 11, and cancelled claim 11. Independent claim 35 already included the limitations of claim 11. In the Advisory Action mailed 10/12/06, the Examiner entered the after-final amendment.

The claimed percentage of manganese dioxide is significantly greater than the percentage taught by Friend. There is no teaching or suggestion in Friend to use percentages of manganese dioxide far exceeding the percentages used in the listed examples. In order to overcome the shortcomings of the teaching in Friend, the Examiner improperly turns to Anderson. Anderson, however, also does not teach a cathode having between 82 and 92% manganese dioxide. Anderson does teach that the ratio of manganese dioxide to carbon material can "range from about 0.33:1 to about 12:1." (Anderson, col. 3, lines 15-21). The Examiner misconstrues the teaching of Anderson by assuming that the cathode of Anderson does not include any additional components. This mistake causes him incorrectly to conclude that Anderson describes a range of between 25 and 92% manganese dioxide. (Office Action dated 12/02/03, page 3, lines 11-15). Furthermore, two of the three examples of cathode compositions taught by Friend already have a manganese dioxide to carbon material ratio of greater than 12:1. One having ordinary skill in the art at the time of invention would not have been motivated by Anderson to increase the manganese dioxide percentage of the Friend cathode, given that Friend's cathode already had a manganese dioxide to carbon material ratio in excess of the high end ratio taught by Anderson. Furthermore, there is no teaching in Anderson that would motivate one having ordinary skill at the time of invention to eliminate the other components in the cathode of Friend. (Amendment filed 9/12/06, page 12).

The Examiner also misapplies the teachings of Adams in an attempt to modify Friend to result in a battery having the claimed range of carbon fiber. Adams is directed primarily towards PTFE-bound electrodes using nickel hydroxide as the electrochemically reducible cathode material, a material with different electrical properties than the manganese dioxide taught by Friend. Adams merely mentions that "conductive diluents" such as graphite may be included to the electrode because the nickel hydroxide is not inherently conductive. (Adams, col. 4, lines 20-25). Adams says the graphite can be in the form of powder and/or fibers, and that:

The total graphite content of a nickel electrode, for example, advantageously comprises up to about 30% by weight of the dry filter cake with about 23%-30% being preferred. The graphite therein is preferably in both the powdered and fibrous form (i.e. about 0.5 mm long), there being about half again as much powdered graphite (i.e. by weight) as there is fibrous graphite, though this can vary considerably.

(Adams, col. 4, lines 25-36).

This teaching, however, does not provide a sufficient motivation for substituting the carbon additive of Adams, taught for use with nickel hydroxide, for carbon microfibers in Friend used in a manganese dioxide cathode. In the Office Action dated July 28, 2006, the Examiner contends that the teaching of Adams does apply to manganese dioxide by referring to column 1, line 10 of Adams, which states that the disclosed invention "is useful for all of the popular alkaline storage battery electrodes (e.g. zinc, cadmium, nickel, silver etc.)." This section of the Adams' specification, however, is only suggesting that these other cathode materials could be used in a PTFE-bound electrode, not that other cathode materials should contain the carbon material additive that Adams specifically teaches for use with nickel hydroxide. (See Amendment filed 9/12/06, pages 10-11).

The Examiner claims that one having ordinary skill in the art at the time of invention would have found it obvious to modify the teachings of Friend by Adams in order "to achieve greater conductivity." (Office Action mailed 7/28/06, page 5). One having ordinary skill in the art at the time of invention, however, would be unlikely to believe that the substitution of the carbon material of Adams for the carbon material of Friend would result in greater conductivity, given that Friend teaches a specific carbon microfiber that yields excellent conductivity while Adams offhandedly mentions that a mixture of powdered and fibrous graphite would improve conductivity.

In further support of the combination of references, the Examiner repeatedly overstates the ruling in the case of *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), asserting that absent the showing of unexpected results, "the weight percentage of the active material is an optimizable parameter for a result-effective variable." (See e.g., Office Action dated 12/02/03, page 3, lines 9-19). The Examiner states that because the percentage of cathode active material directly affects the battery's discharge capacity, "a skilled artisan" would find it obvious to optimize the weight percentage of the cathode active material. (Office Action dated 12/02/03, page 3, lines 17-19). As shown in the chart on page 13 of the Amendment filed 9/12/06, *In re Boesch* involved a composition where each component percentage range overlapped each component ranges taught by each of the two prior art references, Lamb and Pohlman et al. For *In re Boesch* to apply, "the prior art would have [to have] suggested 'the kind of experimentation

necessary to achieve the claimed composition.'" *In re Boesch*, 617 F.2d at 276. This is not the case in the present application. Unlike the prior art references used in *In re Boesch*, none of the references (Friend, Adams, or Anderson) individually teaches or suggests ranges that come even close to the claimed ranges of components in claim 1. Friend fails to teach a manganese dioxide percentage that is even close to the percentage of manganese dioxide claimed, and neither Anderson or Adams provides a sufficient suggestion for one having ordinary skill in the art at the time of invention to perform "the kind of experimentation necessary to achieve the claimed composition" of this significantly different battery cathode. *Id.* The Examiner's overstatement and misapplication of *In re Boesch* is in conflict with federal court precedent that has repeatedly stated that "obvious to try is not the standard of § 103." *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

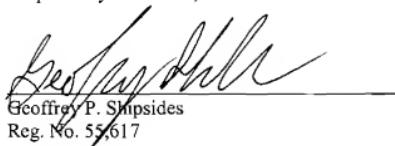
For at least the reasons stated above and previously in the record, Applicants respectfully submits that the rejections under 35 U.S.C. § 103 are unsupported and should be reversed.

This brief is being submitted with a Pre-Appeal Brief Request for Review, Notice of Appeal, Request for a 1 Month Extension of Time, and corresponding payment authorization.

Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 11/28/2006


Geoffrey P. Shipsides
Reg. No. 55,617

Fish & Richardson P.C.
60 South Sixth Street, Suite 3300
Minneapolis, MN 55402
Telephone: (612) 335-5070
Facsimile: (612) 288-9696